

E3 What is Next to be Offshored, IC Design Jobs or IC Design Future?

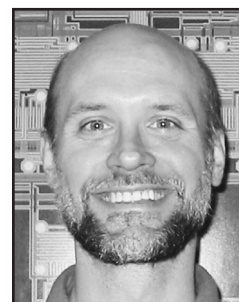
Organizer: Hui Pan, Broadcom, Irvine, CA

Chair: John Stonick, Synopsys, Hillsboro, OR



The offshoring of chip manufacturing has brought about profound changes in the semiconductor industry – affordable foundry services and a boom of fabless integrated circuit (IC) design business. Now comes the next step: moving IC design offshore. Will this lead to another boom in the semiconductor industry that features a new "design-less" business model; or does design-less simply mean jobless for those presently employed in the industry?

The impact is not clear. Will offshoring of IC design stimulate economies in "lower-cost" regions, creating more consumers which in turn will create more demand for semiconductor-based products and jobs? Is off-shoring driven by the need to meet growing labor demands by creating new jobs in geographical areas in which there is talent available; or is it purely financial and driven by the desire to move existing jobs to areas that are perceived to have lower labor costs?



One major factor in determining the outcome is whether all designs are offshorable, or if there will be lines drawn based upon complexity, sensitivity to IP issues and/or defense-related issues. The movement of outsourcing IC design has already begun, and is growing in momentum. One question the panelists will explore is the timeline. Will the impact be broadly felt in a year, 2 years, or 5 years?

The effect on the future of IC engineering education is also uncertain. Will the offshoring trend scare students away from engineering, forcing the need for even more offshoring? Given the situation, should we recommend that kids in traditional Hi-Tech regions study IC design?

These questions regarding the offshoring of IC design, as summarized below, will be addressed by this panel.

- What is the roadmap?
- What are the impacts?
- What should I do as an IC designer?

Panelists Statements



Clair Brown, University of California, Berkeley, CA

Semiconductor design jobs may be at risk from offshoring by U.S. companies. We can learn about the impact from the earlier offshoring of assembly, which kept the U.S. chip industry cost-competitive, and of fabrication, which gave rise to the dynamic fabless sector centered in Silicon Valley. Rising chip complexity, price pressures, and growing Asian markets have spurred design offshoring to India and China where increasing numbers of design engineers earn a fraction of U.S. wages. Here I discuss to what extent Asian designers actually compete with U.S. engineers, and how U.S. engineers should respond.



Ron Hira, Rochester Institute of Technology, Rochester, NY

There are both positive and negative impacts caused by offshoring. But the public debate is misleading because the cheerleaders of offshoring have spent \$100 million on public relations to convince the American public and policymakers that it is good for the country. As is to be expected, the cheerleaders systematically overestimate the benefits and underestimate the costs from offshoring. More importantly, the cheerleaders speak with unwarranted certainty that the effects will surely be positive for the US, all but ignoring the negative effects on America's innovation system and military security. I will shed light on what economic theory has to say about offshoring (there is significant uncertainty) and what we objectively know about offshoring's impacts.



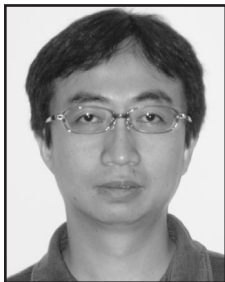
Brian Fuller, EE Times, San Francisco, CA

Concerned? Certainly. Anxious? Often. Throwing in the towel? Absolutely not. The question is how do American engineers view offshoring, and the responses have come in droves to EE Times in letters, anecdotes, and research findings, for more than three years. The bottom line is that most engineers understand the rationale behind offshoring, have experienced the good and the bad and keep an eye on it, but they're not heading to the hills. Indeed, offshoring, despite the public demagoguing of the issue by commentators like Lou Dobbs, is a necessary evolution of electronics. And as long as America can keep innovating and keep ahead of the R&D curve, its innovators will move up the food chain.



Jurgen Knorr, Dubai Silicon Oasis, Dubai, UAE

IC process-and-design innovations have enabled several "golden ages" for the semiconductor industry within highly developed industrialized countries. As communications technology advances, another "golden age" will come up. For decades, each "golden age" has depended on favorable, sometimes unique, market opportunities to convert innovations into money/profits and relied on cost-reduction methods to bring products from hi-tech system applications to the bigger common-consumer-electronics market. However, if there were, are, or will be, reasons to produce more competitive integrated circuits and systems for either lower cost or proximity to the customers, a shift of IC manufacturing, as well as IC design from already-developed industrial regions to so-called offshore low-cost regions will arise, even enabled and protected by the WTO regulations! So, there should be no surprise within the world in which we live.



Bill Yang Liu, Analog Devices, Shanghai, China

Nowadays, economy, markets, customers, everything, is becoming globalized. Of course, design is required to expand globally too, to support worldwide customers. WHERE we do design is already not important, anymore, WHAT we are doing turns into the only determining factor for success. Rather than simply moving design offshore and using outsourcing, what we really need is to allocate and grow a strong design technical team close to Global-Local, customers to work for them efficiently without any language, culture and time-difference barriers. It's all about how to satisfy customers with our best effort, not cost-saving, design transfer, jobless, etc. In fact, IC designers will have more chance to jump out of cubicles to work internationally.



Marco Corsi, Texas Instruments, Dallas, TX

If an engineering team in any other place outperforms us, they deserve the credit. By other place, I include onshore and offshore development facilities. I also believe that if any development team shines, then it will survive. I think that the demand for designers/engineers will outstrip supply in good times, and that in bad times, the groups that get to survive are the teams with proven track record that rise to the challenge posed by the other teams. So whining about offshore design teams getting all of the business is really a waste of time. My solution is to raise the game. As long as we do this, we will have jobs. Outsourcing engineering only works if they have the quality to back it up: If they are better, they deserve to get the business; be better than them, and you will survive.



Daniel Radack, DARPA, Arlington, VA

There is a compelling need for trusted integrated circuits for defense systems. To meet these needs, the Department of Defense has established a "Trusted" foundry to provide low-volume access to leading-edge technologies. Intellectual property circuit blocks and ASIC design services from the vendor are also a part of this contractual arrangement. While this provides a solution for fabrication of some circuits, the question remains, how to ensure that large and complex designs can be trusted? A movement of design expertise overseas greatly complicates the issue. Innovative ideas to use heterogeneous integration of chipsets, software-programmable circuit blocks, and simplifying overall design, may provide some solutions to retain a trusted design infrastructure onshore.